Track: Gravity-Social Determinants of Health

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Introduction to Gravity-Social Determinants of Health:

This track is focused on using FHIR® resources to help document the availability of stable food access

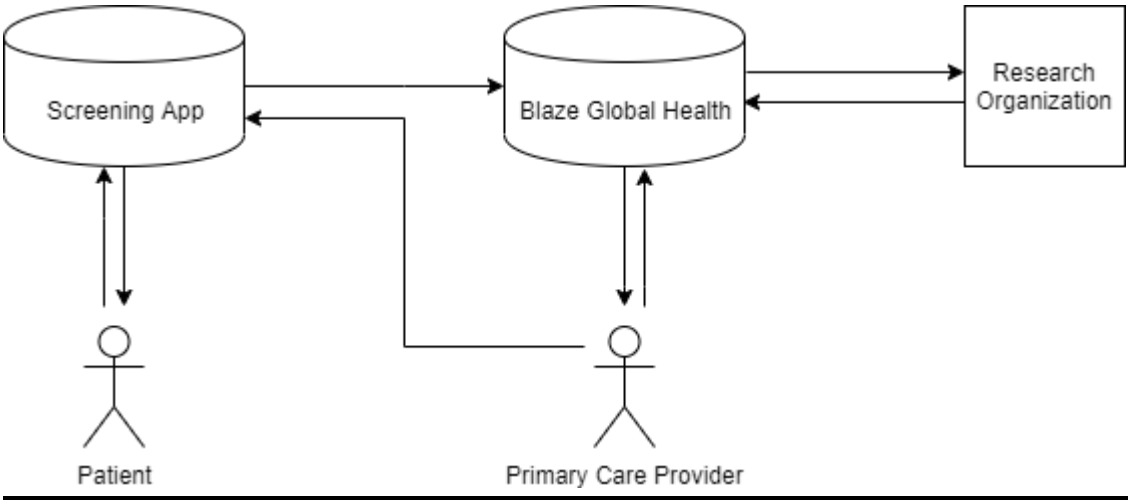
Social Determinants of Health

Social Determinants of Health (SDOH) are the various economic and social conditions that can affect the health of individuals and larger populations.

By documenting these situations for each patient, it's possible to develop care plans better tailored for each patient's unique situation, hopefully leading to better outcomes. In situations where stable food access is an issue, it may be possible to pre-fill and print government food assistance forms at the clinician's office, which could ease some burdens involved in starting a physician recommended diet.

In order to accomplish these tasks, specific records will have to be exchanged between the medical office's computers and EHR system(s) (represented using the **Blaze Global Health** FHIR® PIT, a patient's computer (mobile phone, or pc), and a downstream researcher's computer.

During the InterOpathon, these specific records and interactions will be handled using FHIR® resources. The below diagram gives a rough overview of the interactions involved. The Screening App refers to a participant-implemented application backed by the Connectathon Application PIT.



The Gravity use cases will utilize the below FHIR® resources. You may find it useful to read into the details about them on the HL7 site - https://www.hl7.org/fhir/resourcelist.html.

- Task
- Patient
- QuestionnaireResponse
- Questionnaire
- Consent
- CommunicationRequest
- CommunicationResponse

Setup prior to the event

- Be able to access this page, and any subpages:

  https://www.hl7.org/fhir/resourcelist.html

- Be able to access your FHIR® PITs containing test data. In particular, the **Blaze Global Health** FHIR® PIT, and the **Connectathon** FHIR® PIT.

- Be able to access a web interface in IOL for simple FHIR® queries

Useful Knowledge to Have

- Knowledge of basic HTTP/REST API usage
- Python/Java/Javascript knowledge
- Github navigation knowledge

Scenario 1:

Action: Create an application that the primary care physician will use to identify patients in need of SDOH screening and communicate that set of PATIENTS to the screening app. In this scenario, the **Blaze Global Health** FHIR® PIT will act as the primary care physician's electronic health record platform. The **Connectathon Application** FHIR® PIT will act as the screening app.

Preconditions: Read from the **Blaze Global Health** FHIR® PIT. Write to the **Connectathon Application** FHIR® PIT.

Success Criteria:

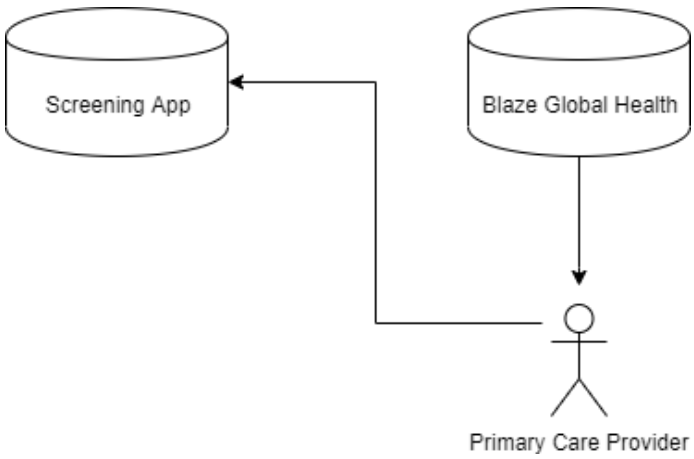
- The primary care physician sees relevant and appropriate information for identifying patients in need of screening (for example: upcoming appointments and/or existing questionnaire responses).
- The screening application receives a BUNDLE containing both a QUESTIONNAIRE and a list of PATIENTS.
- Optional: The screening request is captured in a TASK for each PATIENT, recorded in the Blaze Global Health FHIR® PIT and visible to the primary care physician.

Example QUESTIONNAIRE Resource (some parts omitted for brevity)


```
"resourceType": "Bundle",
  "id": "13395c9d-2f73-4e34-aa96-d1515a2438b6",
  "meta": {
  "entry": [
   {
    "fullUrl": "https://dev-jtx41.devinteropland.com/blaze-global-health-
system/fhir/Questionnaire/1499",
    "resource": {
     "resourceType": "Questionnaire",
     "id": "1499",
     "version": "2",
     "name": "HungerVitalSign",
     "title": "Hunger Vital Sign ",
     "status": "active",
     "subjectType": [
      "Patient"
     ],
     "date": "2020-05-03T23:44:43+00:00",
     "publisher": "CMS",
     "description": "Questionnaire to assess food insecurity",
     "purpose": "Assess Food Insecurity",
     "approvalDate": "2020-05-03",
     "lastReviewDate": "2020-05-03",
     "effectivePeriod": {
      "start": "2020-05-03T23:44:43+00:00",
      "end": "2020-05-03T23:44:43+00:00"
     "code": [
      {
       "system": "http://loinc.org",
       "code": "88121-9",
       "display": "Hunger Vital Sign (HVS)"
      }
     ],
     "item": [
      {
       "linkId": "1",
       "definition": "Worried Food Would Run Out",
       "code": [
        {
         "system": "http://loinc.org",
         "code": "88122-7"
        }
       ],
```

Things to consider while implementing this scenario:

- What information will the primary care physician rely on to identify patients in need of screening?
- How will the primary care physician select a questionnaire to administer?
- How will the screening app receive the QUESTIONNAIRE resource?



Scenario 2:

Action: Create an application that patients can use to answer QUESTIONNAIRES that will communicate the responses to an EHR system. In this scenario, the Connectathon Application FHIR® PIT serves as the data repository for the application that will be created. The **Blaze Global Health** FHIR® PIT represents the clinician's electronic health record system.

Preconditions: Read from and write to the **Connectathon Application** FHIR® PIT. Write to the **Blaze Global Health** FHIR® PIT. It will be helpful to have the **Questionnaire Response Generator** provided for this scenario running locally.

Success Criteria:

- QUESTIONNAIRERESPONSE and CONSENT resources are captured in the **Connectathon Application** FHIR® PIT.
- All information recorded in the **Connectathon Application** FHIR® PIT is also communicated to the **Blaze Global Health** FHIR® PIT.
- Optional: The appropriate TASK resource in the **Blaze Global Health** FHIR® PIT is updated to indicate that the screening is complete.

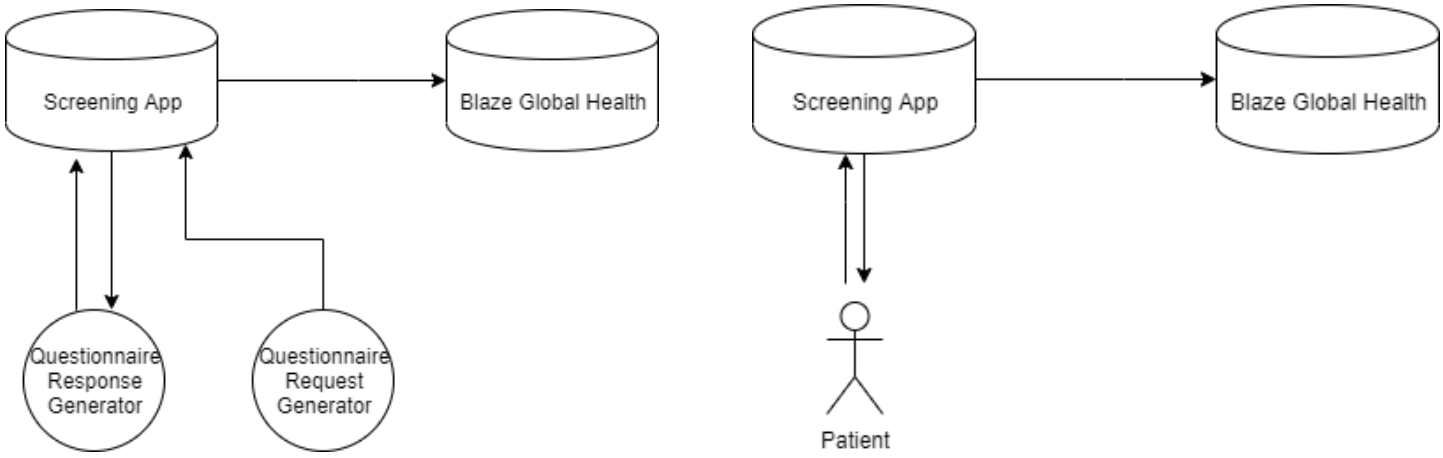
Example QUESTIONNAIRE RESPONSE
(To be returned from the app, or from the Questionnaire Response Generator):


```
"entry": [
  {
   "fullUrl": "uun:uuid:bedad093-89ac-4f5f-9f57-3763d46f1853",
   "request": {
   "resource": {
    "author": {
    "authored": "2020-05-19T09:37:03.864076",
    "id": "bedad093-89ac-4f5f-9f57-3763d46f1853",
    "item": [
     {
      "answer": {
       "valueCoding": [
        {
         "code": "LA6729-3",
         "display": "Sometimes true",
         "system": "http://loinc.org"
        }
       ]
      },
      "linkId": "1",
      "text": "Within the past 12 months we worried whether our food would run out before we got
money to buy more [U.S. FSS]"
     },
     {
    ],
    "meta": {
    "questionnaire": "1406",
    "resourceType": "QuestionnaireResponse",
    "status": "completed"
   }
  },
  {
 ],
 "resourceType": "Bundle",
```


Things to consider while implementing this scenario:

- The event GitHub repository contains endpoints to simulate both a primary care physician creating screening requests and a patient responding to questionnaires.
- How will the questions that make up the QUESTIONNAIRE be presented to the patient?
- How will the patient specify whether they CONSENT to their responses being disclosed?

- How will a QUESTIONNAIRE RESPONSE be connected to the corresponding TASK in the EHR system?



Scenario 3:

Action: Write a system that allows a primary care physician to respond to COMMUNICATIONREQUESTS from research organizations interested in QUESTIONNAIRE RESPONSES. In this scenario, the **Blaze Global Health** FHIR® PIT represents the clinician's electronic health record system.

Precondition: Read from and write to the **Blaze Global Health** FHIR® PIT.

Success Criteria:

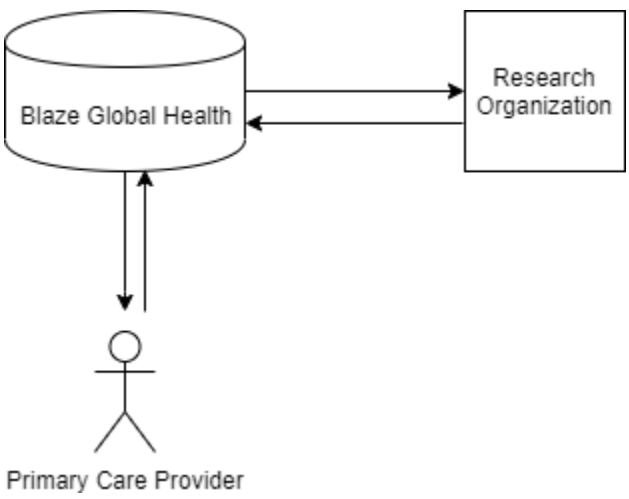
Success Criteria:

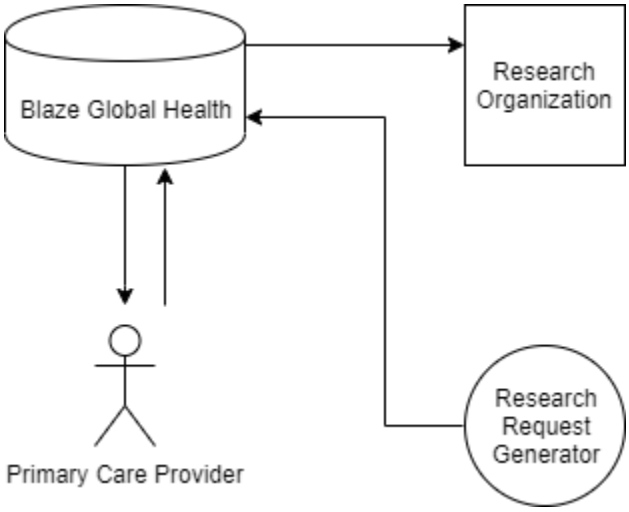
- The primary care physician can review a COMMUNICATIONREQUEST and the QUESTIONNAIRERESPONSE resources to which it refers.
- The COMMNICATION generated in response to the request is captured in the Blaze Global Health FHIR PIT.
- Optional: Also allow the physician to review CONSENT resources (which are generated in Scenario 2, but not included in the beginning IOL dataset).

Things to consider while implementing this scenario:

- The event GitHub repository contains an endpoint to simulate a research organization submitting COMMUNICATIONREQUESTS

- Assume that once a COMMUNICATION is written to the **Blaze Global Health** FHIR® PIT, it is also sent to the requesting organization. The research organization is not modelled as part of IOL.
- What CONSENT is required before the requested information may be disclosed?





Scenario 4:

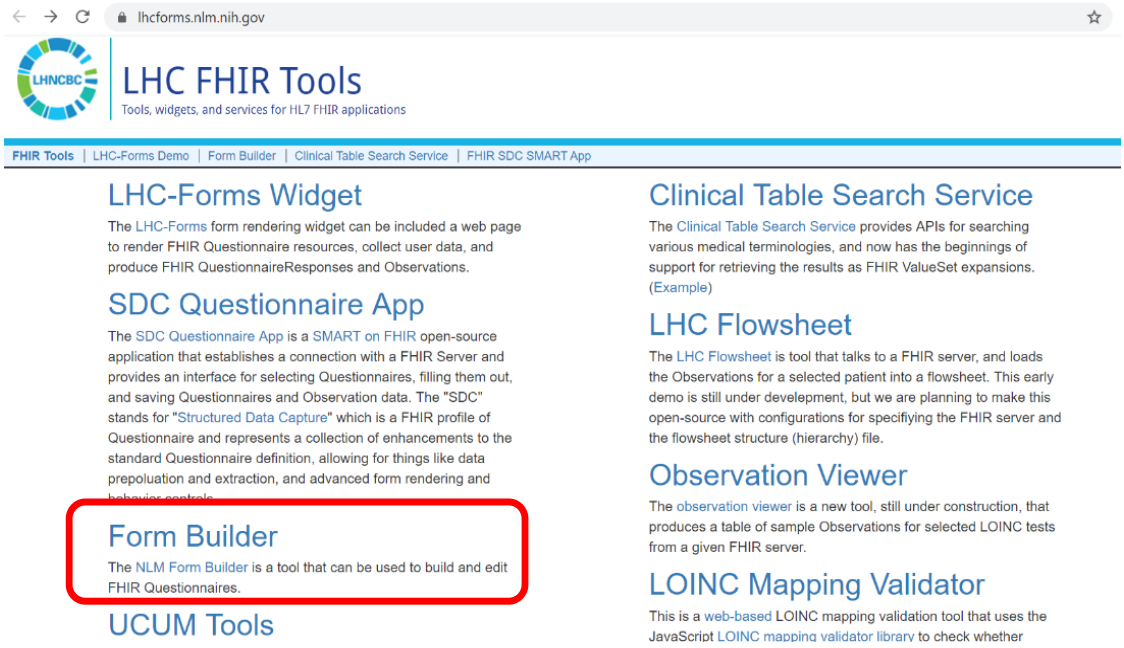
Action: Generate a new QUESTIONNAIRE using "**LHC FHIR® TOOLS**" (linked below) and import them into the **Blaze Global Health** FHIR® PIT.

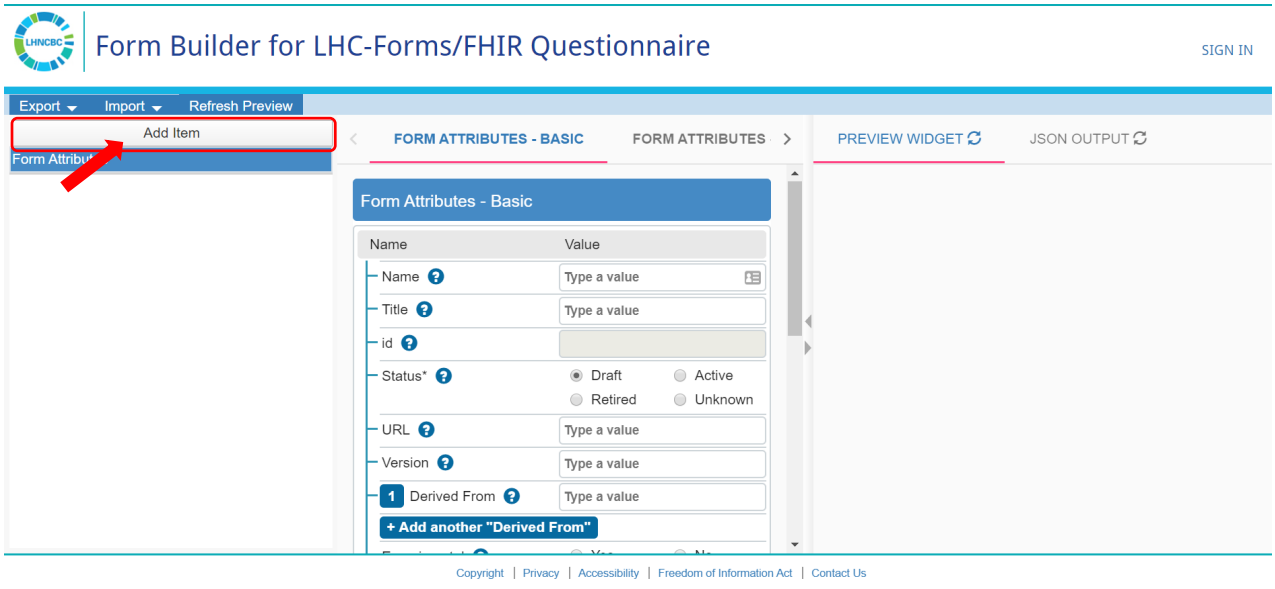
https://lhcforms.nlm.nih.gov/

Preconditions: Review the explanatory video. Write to the **Blaze Global Health** FHIR® PIT.

Success Criteria: The scenario has unique identifiers and clinicians can send out the newly created questionnaire to patients.

Example:





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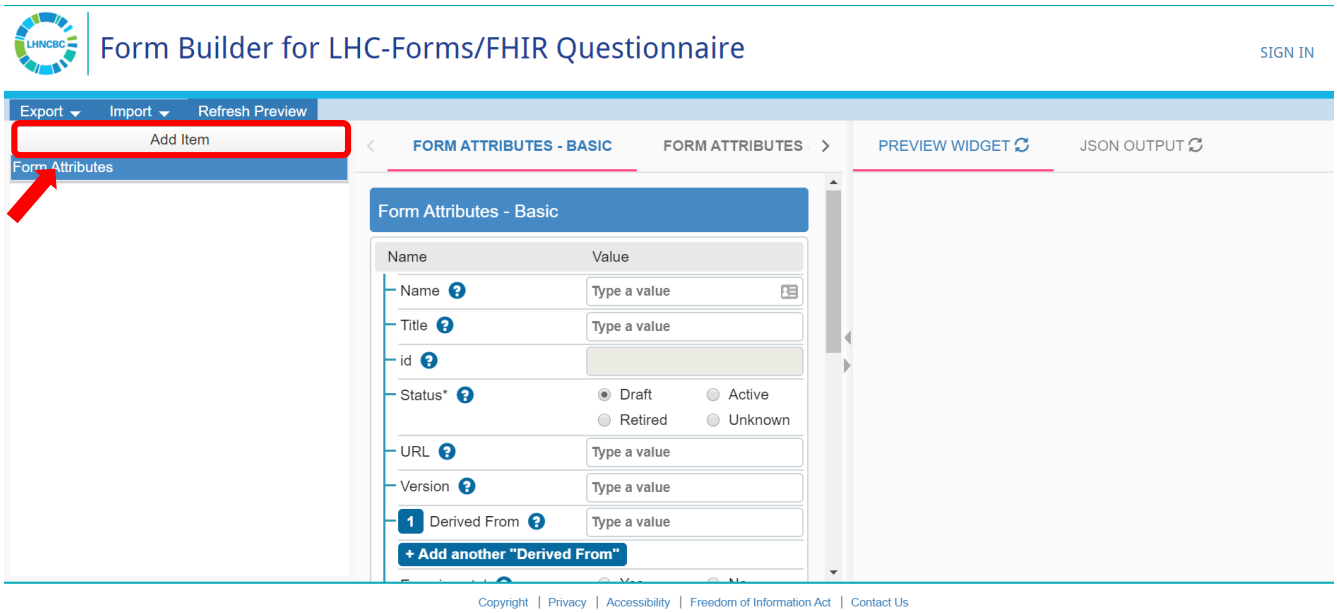

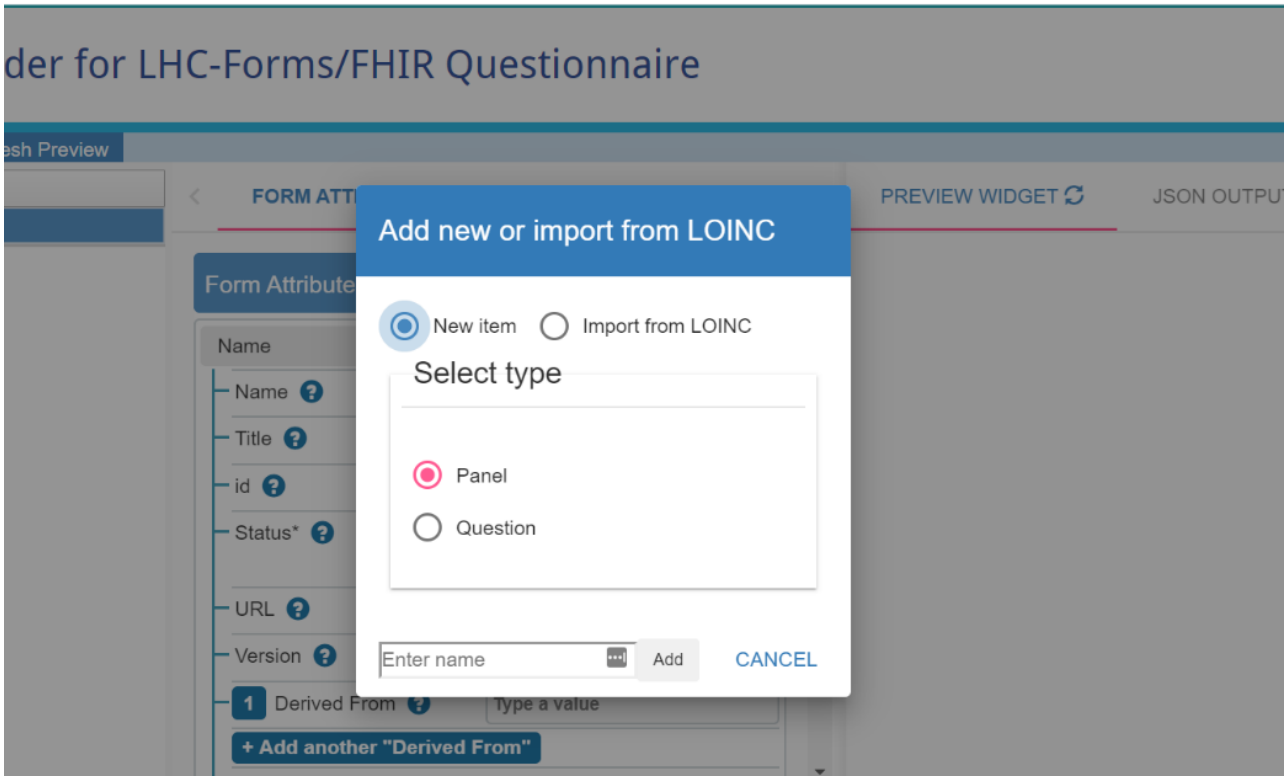

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At this step, you can either import a fully developed your fully developed panel from LOINC using the "Import from LOINC" option, or select the "New Item" option to use temporary codes for forms that are not formally specified in LOINC (available here): https://trifoliaFHIR®.lantanagroup.com/igs/lantana_hapi_r4/SDOHCC/PlaceholderCodeSystemandPlaceholderCodes.html)

Artifact Naming

Artifact names must be unique, and they must contain these segments, separated by underscores, in the order specified

1. **SDOHCC**: This segment is the identifier assigned to the Gravity Project by HL7. (Case for this segment is all upper case since profiles are currently generated in Forge which requires an upper case first letter of the name.)
2. **FHIR® resource name** (e.g., Observation, Goal, etc. Concatenated FHIR® resource names MUST be represented as in FHIR® using concatenated capitalized words (Pascal Casing)
3. **A high-level label** for the content category that the profile addresses (e.g., food insecurity, housing, transportation, etc.).
4. **A number intended to distinguish different profiles** for which Segments 1, 2 and 3 are identical. (e.g., Gravity profiles that address the same high-level category for a given FHIR® resource).

For more information, refer to the Naming Convention Guide.

Questions to Consider:

- Are the newly created QUESTIONNAIRES newer versions of the same QUESTIONNAIRE?
- Will QUESTIONNAIRE RESPONSES from an older QUESTIONNAIRE run into issues if there is a newer version of the QUESTIONNAIRE?
- Are there any updates required to the patient's computing platform to process a newer QUESTIONNAIRE?

Judging Criteria

IGNITE
Interoperability: APIs and FHIR® Heat Up

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Alignment with Track	Helps to improve Inter-operability	Innovation & Creativity	Use of APIs	User Experience	Technical Difficulty	Presentation or Demo
25%	25%	15%	10%	10%	10%	5%
How aligned was the solution with one of the event Tracks?	Does the team clearly show how their solution could be used to improve interoperabil-ity?	Did the team create some-thing that has not already been created? Is it unique?	Did the team use APIs available to create a solution?	What is the wow factor? Would others be impressed by what was built? How easy is the solution to use?	Is the project technically impressive / complex? Is it remarkable that a team created this solution in the time allowed?	Was the presentation or demo well put together? Did the team seem prepared? How well did they explain the problem and solution? (only judge on content, not video quality)

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